

Linzer biol. Beitr.	32/1	247-251	31.5.2000
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## **The larva of *Eusynthemis ursula* THEISCHINGER (Odonata: Synthemistidae)**

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**A b s t r a c t :** The larva of *Eusynthemis ursula* THEISCHINGER is described, illustrated, diagnosed and discussed.

**K e y w o r d s :** *Eusynthemis ursula*, larva, description, ecology.

### **Introduction**

The isolated position of *Eusynthemis ursula* THEISCHINGER was stressed in its original description (THEISCHINGER 1998a). It was therefore instrumental to find the larva of the species or of its more recently described (THEISCHINGER 1999) closely allied congener *E. ursula* THEISCHINGER.

On November 30<sup>th</sup> 1999, together with L. Müller (Berowra), we made a concerted effort and were able to collect larvae at exactly the two spots where adults of the incredibly local species had been collected in 1997 and 1998. These larvae, one of which was bred out in the laboratory, are the basis of the following description.

### **Description**

#### ***Eusynthemis ursula* THEISCHINGER**

*Eusynthemis ursula* THEISCHINGER 1998a: 143 (part); 1999: 375.

**L a r v a** (Photo 1, Figs 1-8)

**D i m e n s i o n s :** Total length approximately 19.0-22.0 mm; width of head across eyes 4.3-4.7 mm; length of prementum 3.5-3.9 mm, width at distal end 3.7-4.1 mm, width at base 0.9-1.1 mm; length of metafemur 3.3-3.7 mm; length of abdomen 12.5-14.5 mm; greatest width 5.7-6.2 mm.

**C o l o u r a t i o n :** Head and synthorax including wing pads dark brownish grey to dark greyish brown; pronotum pale greyish brown; legs dark brownish yellow, femora with two broad darker rings, one basal, the other subapical, most distinctive in metafemur; abdomen brownish yellow with brown pattern.

**M o r p h o l o g y :** Prementum very deep, not widening abruptly from base; ligula with

median lobe short, wide, evenly rounded, retracted between rather widely rounded lateral lobes, margins of all lobes set densely with short and rather stout setae; generally 6 primary premental setae and 5-6 secondary setae; labial palps with 3/4 dentations including a very small one next to the movable hook, thus 2/3 of them very large; generally 4 larger palpal setae; frontal plate very strongly developed, wide, with sides somewhat rounded and anterior margin almost straight, reaching almost to end of antennal segment 3, rather short scale like setae mainly along margins; eyes protruding dorsally; no fringes of hair along posterior eye margins; postocular lobes simply rounded, not differentiated, with moderately long scale-like setae along margins. Pronotal lobes evenly rounded anteriorly, somewhat angulate posteriorly, with short stout prominent setae. Abdominal terga with densely set, very short, truncate setae along posterior margin and with rather sparse long thin hairs; no dorsal or lateral processes; epiproct with base wide and apex pointed, almost as long as short stout but acutely pointed paraprocts; cerci approximately 1/2 length of paraprocts.

**Material examined:** 1 final instar female exuviae (and associated imago), 15 (including 4 final instar) male and female larvae: New South Wales, Chichester State Forest, springs of Telegraphy River and Whitehouse Creek, 980 m, 30.11.1999, G. Theischinger, L. Müller and J.H. Hawking [in Collections G. Theischinger and MDFRC (Murray-Darling Freshwater Research Centre)].

### Ecology, biology and affinities

All larvae of *E. ursula* were collected at the two sites where adults had been found (THEISCHINGER 1998a). They seemed to be most common at or near the middle of the shallow (5-10 cm deep) streams of about 1 m width, very close to their origins at an altitude of about 980 m. The substrate was mostly coarse gravel and some sand in very clean well flowing water. The larval material includes 16 individuals from very early to final instars. As the smallest larvae collected were returned to their natural habitat and as *E. ursula* adults seem to be on the wing only December and January, it is assumed that the species has a life-cycle of at least 2 years. The largest of the collected larvae started to transform in captivity at about 430 a.m. on December 2<sup>nd</sup> 1999 at about 20 cm above water level.

The larva of *E. ursula* can be readily distinguished from all other Australian *Eusynthemis* species (perhaps with the exception of *E. ursula* whose larva is still unknown) by its peculiar premental ligula and labial palps. The ligula has a small widely rounded median lobe retracted between rather wide lateral lobes and the labial palps have only 3 or 4 (including one very small each side) dentations and generally only 4 larger setae. The frontal plate of *E. ursula* is unusually wide and its legs are unusually short for *Eusynthemis*. The peculiar characters of larval *E. ursula* are at least interesting regarding the present concept of Gomphomacromiidae (BECHLY 1996, CARLE 1995, LOHMANN 1996a, 1996b) and the inclusion in it of *Archaeophya* FRASER. The premental ligula and labial palps of *E. ursula* correspond very closely with, and only with, *Archaeophya* (see THEISCHINGER & WATSON 1984, HAWKING & THEISCHINGER 1999) but not with any other Australian synthemistid (see THEISCHINGER 1998b, HAWKING & THEISCHINGER 1999) or with *Gomphomacromia* BRAUER (see THEISCHINGER & WATSON 1984).

## Acknowledgments

We wish to thank Dr S. Dunkle (USA) for critically reading the manuscript and to Mr L. Müller (Berowra) for help in the field.

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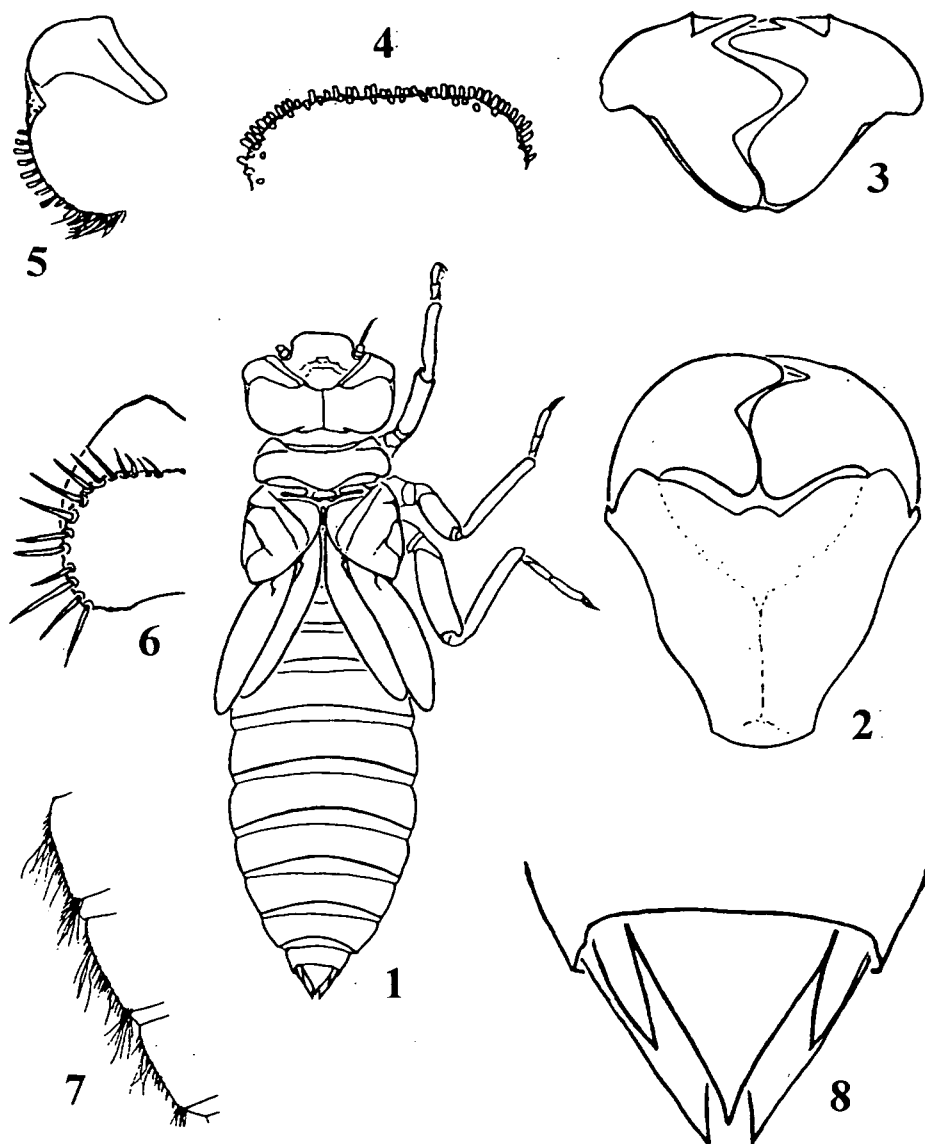
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**Photo 1.** Final instar larva of *Eusynthemis ursula* THEISCHINGER (Photo J.H. Hawking)



**Photo 2.** Habitat of *Eusynthemis ursula* THEISCHINGER at Whitehouse Creek, Chichester State Forest, New South Wales (Photo J.H. Hawking)



Figs 1-8. *Eusynthemis ursula* THEISCHINGER, final instar larva: 1 – dorsal aspect; 2 – prementum and labial palps, ventral aspect; 3 – labial palps, frontal aspect; 4 – frontal plate, dorsal aspect; 5 – left eye and postocular lobe, dorsal aspect; 6 – left pronotal lobe, dorsal aspect; 7 – left margin of segments 7-9, dorsal aspect; 8 – anal pyramid, dorsal aspect.